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1           1. A polishing pad for polishing a substrate in a  
2 chemical mechanical polishing apparatus, comprising:  
3           a first polishing region having a first plurality of  
4 substantially circular concentric grooves with a first width  
5 and a first pitch;  
6           a second polishing region surrounding the first  
7 polishing region and having a second plurality of  
8 substantially circular concentric grooves with a second  
9 width and a second pitch; and  
10           wherein at least one of the second width and second  
11 pitch differs from the first width and first pitch.

1           2. The polishing pad of claim 1, further  
2 comprising a third polishing region surrounding the second  
3 polishing region and having a third plurality of  
4 substantially circular concentric grooves with a third width  
5 and a third pitch.

1           3. The polishing pad of claim 2, wherein the third  
2 width and pitch are equal to the first width and pitch,  
3 respectively.

1 ~~SUB B~~ 4. The polishing pad of claim 3, wherein the first  
2 pitch is larger than the second pitch.

1 ~~11~~ 5. The polishing pad of claim ~~4~~<sup>10</sup>, wherein the first  
2 pitch is about two times larger than the second pitch.

1 ~~SUB B~~ 6. The polishing pad of claim 3, wherein the first  
2 width is less than the second width.

1        <sup>13</sup>  
2        ~~7~~. The polishing pad of claim <sup>12</sup>~~6~~, wherein the  
second width is about six time greater than the first width.



4 substantially circular concentric grooves; and  
5 a second polishing region surrounding the first  
6 polishing region and having a plurality of substantially  
7 serpentine grooves.

1 21. The polishing pad of claim 20, wherein the  
2 circular grooves have a first pitch, and the serpentine  
3 grooves have a second, different pitch.

1 22. The polishing pad of claim 20, wherein the  
2 circular grooves have a first width, and the serpentine  
3 grooves have a second, different width.

1 23. The polishing pad of claim 20, wherein the  
2 serpentine grooves have a pitch between about one and two  
3 times their amplitude.

1 24. The polishing pad of claim 20, wherein the  
2 serpentine grooves have a pitch between about one-and-one-  
3 half and two times their width.

1 25. The polishing pad of claim 20, wherein the  
2 serpentine grooves have a width of about 0.125 inches, a  
3 pitch of about 0.2 inches, and an amplitude between about  
4 0.2 and 0.4 inches.

1 26. The polishing pad of claim 20, further  
2 comprising a third polishing region surrounding the second  
3 polishing region and having a second plurality of  
4 substantially circular concentric grooves.

1 27. A polishing pad for polishing a substrate in a



2 groove of the first and second pluralities of grooves has a  
3 depth of at least about 0.02 inches, a width of at least  
4 about 0.015 inches, and a pitch of at least 0.09 inches.

1 33. A polishing pad for polishing a substrate in a  
2 chemical mechanical polishing apparatus, comprising:  
3 a first polishing region having a first plurality of  
4 substantially circular concentric grooves; and  
5 a second polishing region surrounding the first  
6 polishing region and having a plurality of groove arc  
7 segments, the groove arc segments disposed along concentric  
8 circular paths such that each groove arc segment does not  
9 radially overlap a groove arc segment on an adjacent path.

1 34. The polishing pad of claim 33, wherein the  
2 circular grooves have a first pitch, and the circular paths  
3 have a second, different pitch.

1 35. The polishing pad of claim 33, wherein the  
2 circular grooves have a first width and the groove arc  
3 segments have a second, different width.

1 36. The polishing pad of claim 33, further  
2 comprising a third polishing region surrounding the second  
3 polishing region and having a second plurality of  
4 substantially circular concentric grooves.

1 37. The polishing pad of claim 33, wherein the  
2 circular grooves and groove arc segments have a depth of at  
3 least about 0.02 inches, a width of at least about 0.015  
4 inches, and a pitch of at least 0.09 inches.

